



Dart Hawkesbury
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada
Tel (613) 632-5200

Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
P0039709	McM001-VU	1	1	12% 10 Net 30	8948T12	Welded Master Link receive ea			6	4/27/2018	6		S066765	Stock	4/30/2018	\$ 75.65 / Ea	0		\$453.90	McMaster-Carr Supply Co.
		3			188-FSCS-1032-3/4	Bolt			50		50		S066766	Stock	4/30/2018	\$ 0.14 / Ea	0		\$7.12	McMaster-Carr Supply Co.
		4			188-FSCS-1032-5/8	Screw			100		100		S066767	Stock	4/30/2018	\$ 0.08 / Ea	0		\$7.61	McMaster-Carr Supply Co.
		5			3440T55	Lifting Cable			50		50		S066768	Stock	4/30/2018	\$ 1.34 / ft	0		\$67.00	McMaster-Carr Supply Co.
		6			6381K193	Bushing receive pcs			6		6		S066769	Stock	4/30/2018	\$ 3.68 / pcs	0		\$22.08	McMaster-Carr Supply Co.
		7			8183K6	Wire Guide/Grip			10		10		S066770	Stock	4/30/2018	\$ 9.83 / Ea	0		\$98.30	McMaster-Carr Supply Co.
		8			91074A131	Cage Bumper Washer			20		20		S066771	Stock	4/30/2018	\$ 0.62 / pcs	0		\$12.38	McMaster-Carr Supply Co.
		9			92373A271	Anchor Pin			10		10		S066772	Stock	4/30/2018	\$ 0.65 / Ea	0		\$6.48	McMaster-Carr Supply Co.
		10			95327A652	Hex Head Cap Screw receive ea			30		30		S066773	Stock	4/30/2018	\$ 1.63 / Ea	0		\$48.84	McMaster-Carr Supply Co.
		11			98407A134	Retaining Ring receive pcs			100		100		S066774	Stock	4/30/2018	\$ 0.09 / pcs	0		\$9.13	McMaster-Carr Supply Co.
		12			8890K165	Steel Rod			6		6		S066801	Stock	4/30/2018	\$ 1.02 / ft	0		\$6.14	McMaster-Carr Supply Co.

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
		13			8893K148	O1 Tool Steel Rod						6		S066802	Stock	4/30/2018	\$ 1.01 / ft	0		\$6.07	McMaster-Carr Supply Co,
		14			91247A630	Hex Head Cap Screw				25		25		S066775	Stock	4/30/2018	\$ 0.28 / Ea	0		\$7.06	McMaster-Carr Supply Co,
		15			97524A032	Sealing Blind Rivet receive ea				100		100		S066776	Stock	4/30/2018	\$ 0.10 / Ea	0		\$9.82	McMaster-Carr Supply Co,
		16			C10-41	Stain Relief Connector				8		8		S066777	Stock	4/30/2018	\$ 10.30 / Ea	0		\$82.40	McMaster-Carr Supply Co,
		17			C20-120	Locating Pin				25		25		S066778	Stock	4/30/2018	\$ 0.28 / Ea	0		\$7.03	McMaster-Carr Supply Co,
		18			C20-560	Lock Spring Anchor Pin				2		2		S066779	Stock	4/30/2018	\$ 4.56 / Ea	0		\$9.12	McMaster-Carr Supply Co,
		19			C20-830	Lock Washer				100		100		S066780	Stock	4/30/2018	\$ 0.11 / Ea	0		\$11.30	McMaster-Carr Supply Co,
		20			EL-PLUG-M	3-Prong Male Spade Plug				15		15		S066781	Stock	4/30/2018	\$ 7.03 / Ea	0		\$105.45	McMaster-Carr Supply Co,
		21			M301S22GA	301 SS Sheet - Full hard : MATERIAL: AISI 301 SS SHEET MINIMUM 1/4 HARDNESS (NOT ANNEALED) 2B FINNISH AS PER AMS 5517/AMS 5518/AMS 5902/ AMS 5519 OR ASTM A666 WHIT MIN. FTU = 125 KSI & MIN FTY = 75 KSI receive sf				3		3		S066813	Stock	4/30/2018	\$ 27.42 / sf	0		\$82.27	McMaster-Carr Supply Co,

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
		22			MT-BRONZE-C63000-R2.250	Bronze C63000 Round Bar 2.250" MATL AS PER BRONZE C63000 AS PER ANS 4640 OR ASME SB150 OR ASTM B150 OR SAE J461 OR SAE J463				1		1		S066782	Stock	4/30/2018	\$ 16.22 / ft	0		\$17.52	McMaster-Carr Supply Co,
		23			RBT18561-31	10X Magna-Lite				2		2		S066783	Stock	4/30/2018	\$ 26.29 / Ea	0		\$52.58	McMaster-Carr Supply Co,
		24			SWA3-700	Ball Bearing				100		100		S066784	Stock	4/30/2018	\$ 0.11 / Ea	0		\$10.56	McMaster-Carr Supply Co,
		25			SWA6A-1900	Female Spade Terminal - 1/4"						100		S066785	Stock	4/30/2018	\$ 0.07 / Ea	0		\$7.20	McMaster-Carr Supply Co,
		26			SWA6A-2000	1/8" Female Spade Connector						100		S066786	Stock	4/30/2018	\$ 0.07 / Ea	0		\$6.76	McMaster-Carr Supply Co,
		27			59915K274	Rod End Bearing D4777-1				20		20		S066787	Inactive	4/30/2018	\$ 17.14 / pcs	0		\$342.80	McMaster-Carr Supply Co,
Total:										995		995								\$1,496.93	

Plex 4/30/2018 10:19 AM dart.Tollis.Andrew



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO039709**

Supplier: MCM001-VU
McMaster-Carr Supply Co,
P.O. Box 7690
Chicago, IL 60680-7690 USA
Phone: 330 995 5500
Fax: 330 995 9600

PO No: PO039709

PO Date: 4/25/18

Due Date: 4/27/18

**Purchase Order
Revision:**

Revision Date:

Ship-To Contact: Lavoie, Chantal
clavoie@dartaero.com

E-MAILED
APR 25 2018

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: 2% 10 Net 30

Freight Terms:

Special Comments:

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1	8948T12		Welded Master Link receive ea	Firmed	4/27/18	6 Ea	0 Ea	6 Ea	\$75.65/Ea	\$453.90
2	8623K338	1059N976	Silicon Rubber 1/8" (SOFT) receive sf	Firmed	4/27/18	27 sf	0 sf	27 sf	\$55.85333/sf	\$1,508.04
3	188-FSCS-1032-3/4	90128A945 50/pk	Bolt	Firmed	4/27/18	50 Ea	0 Ea	50 Ea	\$0.1424/Ea	\$7.12
4	188-FSCS-1032-5/8	92210A303 100/per pk	Screw	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.0761/Ea	\$7.61
5	3440T55	50 ft	Lifting Cable	Firmed	4/27/18	50 ft	0 ft	50 ft	\$1.34/ft	\$67.00
6	6381K193	1/pk	Bushing receive pcs	Firmed	4/27/18	6 pcs	0 pcs	6 pcs	\$3.68/pcs	\$22.08
7	8183K6	1/pk	Wire Guide/Grip	Firmed	4/27/18	10 Ea	0 Ea	10 Ea	\$9.83/Ea	\$98.30
8	91074A131	20/pk	Cage Bumper Washer	Firmed	4/27/18	20 pcs	0 pcs	20 pcs	\$0.619/pcs	\$12.38
9	92373A271	10/pk	Anchor Pin	Firmed	4/27/18	10 Ea	0 Ea	10 Ea	\$0.648/Ea	\$6.48
10	95327A652	5/pk	Hex Head Cap Screw receive ea	Firmed	4/27/18	30 Ea	0 Ea	30 Ea	\$1.628/Ea	\$48.84
11	98407A134	100/pk	Retaining Ring receive pcs	Firmed	4/27/18	100 pcs	0 pcs	100 pcs	\$0.0913/pcs	\$9.13
12	8890K165	3 ft long	Steel Rod	Firmed	4/27/18	6 ft	0 ft	6 ft	\$1.02333/ft	\$6.14
13	8893K148	6 ft long	O1 Tool Steel Rod	Firmed	4/27/18	6 ft	0 ft	6 ft	\$1.011666/ft	\$6.07
14	91247A630	25/pk	Hex Head Cap Screw	Firmed	4/27/18	25 Ea	0 Ea	25 Ea	\$0.2824/Ea	\$7.06
15	97524A032	100/pk	Sealing Blind Rivet receive ea	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.0982/Ea	\$9.82

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Items										
Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
16	C10-41	6907K14 1/pk	Stain Relief Connector	Firmed	4/27/18	8 Ea	0 Ea	8 Ea	\$10.30/Ea	\$82.40
17	C20-120	98381A546 25/pk	Locating Pin	Firmed	4/27/18	25 Ea	0 Ea	25 Ea	\$0.2812/Ea	\$7.03
18	C20-560	97395A618 1/PK	Lock Spring Anchor Pin	Firmed	4/27/18	2 Ea	0 Ea	2 Ea	\$4.56/Ea	\$9.12
19	C20-830	91102A740 100/pk	Lock Washer	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.113/Ea	\$11.30
20	EL-PLUG-M	7216k5 1/pk color yellow	3-Prong Male Spade Plug	Firmed	4/27/18	15 Ea	0 Ea	15 Ea	\$7.03/Ea	\$105.45
21	M301S22GA	3543T77	301 SS Sheet - Full hard : MATERIAL: AISI 301 SS SHEET MINIMUM 1/4 HARDNESS (NOT ANNEALED) 2B FINNISH AS PER AMS 5517/AMS 5518/AMS 5902/ AMS 5519 OR ASTM A666 WHIT MIN. FTU = 125 KSI & MIN FTY = 75 KSI receive sf	Firmed	4/27/18	3 sf	0 sf	3 sf	\$27.4243/sf	\$82.27
22	MT-BRONZE-C63000-R2.250	8932K54 6.5 INCH	Bronze C63000 Round Bar 2.250" : MAT'L AS PER BRONZE C63000 AS PER ANS 4640 OR ASME SB150 OR ASTM B150 OR SAE J461 OR SAE J463	Firmed	4/27/18	1.083 ft	0 ft	1 ft	\$16.224615/ft	\$17.57
Line Item Note 2 PCS OF 6.5" LONG										
23	RBT18561-31	8485T13	10X Magna-Lite	Firmed	4/27/18	2 Ea	0 Ea	2 Ea	\$26.29/Ea	\$52.58
24	SWA3-700	9529K15 100/per pk	Ball Bearing	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.1056/Ea	\$10.56
25	SWA6A-1900	69525K16 100 pcs per pk	Female Spade Terminal - 1/4"	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.072/Ea	\$7.20
26	SWA6A-2000	69525K14 100 / per pk	1/8" Female Spade Connector	Firmed	4/27/18	100 Ea	0 Ea	100 Ea	\$0.0676/Ea	\$6.76
27	59915K274		Rod End Bearing D4777-1	Firmed	4/27/18	20 pcs	0 pcs	20 pcs	\$17.14/pcs	\$342.80
Line Item Note WO 176520										
									Grand Total:	\$3,005.01
Order Notes										

Order Notes

Procurement Quality Clauses

A005 RIGHT OF ENTRY

A016 PERSONNEL QUALIFICATION

A026 CERTIFICATION OF MATERIAL CONFORMANCE

A032 PUBLIC LAW 101-592 FASTENER QUALITY ACT

A033 STATEMENT OF CONFORMITY/TEST RECORDS FOR NAS, AN and MS FASTENERS

A040 NOTIFICATION OF QUALITY ESCAPE

A041 QUALITY MANAGEMENT SYSTEM

A042 DART NOTIFICATION BY SUPPLIER

A043 RETENTION OF QUALITY DOCUMENTS

A048 COUNTERFEIT PARTS AVOIDANCE, DETECTION, MITIGATION AND DISPOSITION PROGRAM

A049 SUPPLIER AWARENESS

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 4/25/18 2:42 PM dart.lavoie.chantal



200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury ON K6A 1K7
Canada

Purchase Order
PO039709

Order Placed By
Chantal Lavoie

McMaster-Carr Number
2699881-03

Page 1 of 2

04/25/2018

Line	Product	Ordered	Shipped
1	8948T12 Oblong Link Assembly- for Lifting, Grade 80, for 7/32 Chain Trade Size	6 Each	6
3	90128A945 Zinc-Plated Alloy Steel Socket Head Screw, 10-32 Thread Size, 3/4" Long, Packs of 50	1 Pack	1
4	92210A303 18-8 Stainless Steel Hex Drive Flat Head Screw, 10-32 Thread Size, 5/8" Long, Packs of 100	1 Pack	1
5	3440T55 Wire Rope - for Lifting, 3/16" Diameter, 50' Length	50 Feet	50
6	6381K193 Multipurpose SAE 660 Leaded Bronze Sleeve Bearing for 3/4" Shaft Diameter and 1" Housing ID, 1-1/4" Long	6 Each	6
7	8183K6 Brass Submersible Cord Grip, Metric Threads, for 0.12"-0.2" Cord OD, M8 Knockout Size	10 Each	10
8	91074A131 Zinc-Flake-Coated Steel Wedge Lock Washer for 3/8" Screw Size, 0.41" ID, 0.65" OD, Packs of 20	1 Pack	1
9	92373A271 18-8 Stainless Steel Slotted Spring Pin, 3/16" Diameter, 3" Long, Packs of 10	1 Pack	1
10	95327A652 Zinc Yellow-Chromate Plated Steel Hex Head Screw, High-Strength, M10 x 1.5 mm Thread, 100 mm Long, Packs of 5	6 Packs	6
11	98407A134 Side-Mount External Retaining Ring, Zinc Yellow-Chromate-Plated Steel, for 3/8" OD, Packs of 100	1 Pack	1
14	91247A630 Medium-Strength Grade 5 Steel Hex Head Screw, Zinc-Plated, 3/8"-16 Thread Size, 1-3/4" Long, Partially Threaded, Packs of 25	1 Pack	1
15	97524A032 Sealing Blind Rivets, Aluminum, Domed Head, with Aluminum Mandrel, 1/8" Diameter, 0.425" Long, Packs of 100	1 Pack	1
16	6907K14 Brass Submersible Cord Grip, NPT Thread, for 0.24"-0.47" Cord OD, 1/2 Knockout Size	8 Each	8
17	98381A546 Dowel Pin, Alloy Steel, 1/4" Diameter, 1-1/2" Long, Packs of 25	1 Pack	1
18	97395A618 Dowel Pin, 316 Stainless Steel, 3/16" Diameter, 2" Long, Packs of 1	2 Packs	2
19	91102A740 Zinc-Plated Steel Split Lock Washer for Number 10 Screw Size, 0.2" ID, 0.334" OD, Packs of 100	1 Pack	1
20	7216K5 Straight-Blade Connector, Hinged, 3-Blade Plug, Grounded, NEMA 5-15, Yellow	15 Each	15
22	8932K54 Oil-Filled 841 Bearing Bronze Rod, 2-1/4" Diameter, 6-1/2" Long	1 Each	1
23	8485T13 Incandescent-Illuminated Magnifying Glass, 10x, 1-1/4" Long x 1-3/8" Wide Lens	2 Each	2

Packing List

200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury ON K6A 1K7
Canada

Purchase Order
PO039709

Order Placed By
Chantal Lavoie

McMaster-Carr Number
2699881-03

Page 2 of 2

04/25/2018

Line	Product	Ordered	Shipped
24	9529K15 Hardened 440C Stainless Steel Ball, 1/4" Diameter, Packs of 100	1 Pack	1
25	69525K16 Noninsulated Quick-Disconnect Terminals, Single-Crimp Female, 16-14 Gauge, 1/4" Wide x 0.032" Thick Tab, Packs of 100	1 Pack	1
26	69525K14 Noninsulated Quick-Disconnect Terminals, Single-Crimp Female, 16-14 Gauge, 0.11" Wide x 0.02" Thick Tab, Packs of 100	1 Pack	1
27	59915K274 Corrosion-Resistant Ball Joint Rod End, 3/8"-24 Thread, Right Hand	20 Each	20

Expected to ship

2	1059N338 Resilient High-Temperature Silicone Foam, 36" X 36" X 1/8", Soft	9 Each	9 May 1-14
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Notes about your shipment

The U.S. Department of Transportation regulates the shipping of line 23. By purchasing from McMaster-Carr Supply Company, you agree not to transport or permit others to transport purchased items except in accordance with U.S. law and any other applicable laws.



200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Haykesbury ON K6A 1K7
Canada

Purchase Order
PO039709

Order Placed By
Chantal Lavoie

McMaster-Carr Number
2699881-02

Page 1 of 1

04/25/2018

Line	Product	Ordered	Shipped
12	8890K165 Ultra-Machinable W1 Tool Steel Rod, 0.164" Diameter, 3 Feet Long	2 Each	2
13	8893K148 Tight-Tolerance Multipurpose O1 Tool Steel Rod, 0.1250" Diameter, 6 Feet Long	1 Each	1
<hr/>			
Expected to ship			
2	1059N338 Resilient High-Temperature Silicone Foam, 36" X 36" X 1/8", Soft	9 Each	9 May 1-14



200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury ON K6A 1K7
Canada

Purchase Order
PO039709

Order Placed By
Chantal Lavoie

McMaster-Carr Number
2699881-01

Page 1 of 1

04/25/2018

Line	Product	Ordered	Shipped
21	3543T77 Fatigue-Resistant 301 Stainless Steel Sheet with Certification, 12" x 36", Spring Temper, 0.029" Thick	1 Each	

Expected to ship

2	1059N338 Resilient High-Temperature Silicone Foam, 36" X 36" X 1/8", Soft	9 Each	9 May 1-14
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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M3015226A

PO / BATCH NO.: 039709/5066813

DATE: APR 30 2018

MATERIAL CERT REC'D: YES

THICKNESS ORDERED: 226A

QUANTITY RECEIVED: 3 p/z

THICKNESS RECEIVED: 226A

QUANTITY INSPECTED: 3 p/z

SHEET SIZE ORDERED: 3x1

QUANTITY REJECTED: 0

SHEET SIZE RECEIVED: 3x1

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="radio"/> N <input type="radio"/>	
CORRECT FINISH	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORROSION	Y <input type="radio"/> N <input checked="" type="radio"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="radio"/> Y <input type="radio"/> N	<u>Am5 5519</u>
CORRECT THICKNESS	<input checked="" type="radio"/> Y <input type="radio"/> N	
PHOTO REQUIRED	Y <input type="radio"/> N <input checked="" type="radio"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="radio"/> Y <input type="radio"/> N	<u>PO# 039709 Part # M3015226A</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="radio"/> Y <input type="radio"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input type="radio"/> N <input checked="" type="radio"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input type="radio"/> N <input checked="" type="radio"/>	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS 11</u> DATE: <u>APR 30 2018</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

A	NEW ISSUE	DESCRIPTION	RF	BY	DATE	
DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA				
DRAWN		DRAWING NO.	RF			
CHECKED		M301S	<i>g</i>		REV. A	
MFG. APPR.					SHEET 1 OF 1	
APPROVED		TITLE			SCALE	
DE APPR.		301 SS SHEET			NTS	
DATE	10.11.08	DRAWN AND BY DART AEROSPACE LTD CHECKED AND COMPLETED BY DART AEROSPACE LTD NOT TO BE REPRODUCED OR DISTRIBUTED UNAUTHORIZED TO ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD				

LA18466 / M088147



AK Steel Corporation
Metallurgical Test Report
Coshoccon Works
17400 State Route 16
Coshoccon, OH 43812 U.S.A.

Page 1
Load No. 9569387
Srn No. 9569387

MILL ORDER NO. 282962-0104 PROCESSOR ORDER NO. M 01004687 BUYERS ORDER NO. M 01004687
PART NO. 48443
ENGLISH UNITS - PRODUCT - METRIC UNITS
.0320 NOM 36.0000 X 120.0000

LIFT ID	PIECE	HEAT	PARENT LIFT ID	NET WEIGHT	OUTSIDE PROCESSOR ID
373383-10A-001	84	7561249	373383-10A	3,320 LBS. 1,506 KG.	16L00241901
373383-10A-002	84	7561249	373383-10A	3,320 LBS. 1,506 KG.	16L00241902
373383-10A-003	84	7561249	373383-10A	3,320 LBS. 1,506 KG.	16L00241903
373383-10A-004	84	7561249	373383-10A	3,320 LBS. 1,506 KG.	16L00241904
373383-10A-005	14	7561249	373383-10A	540 LBS. 245 KG.	16L00241905
TOTAL LIFTS	TOTAL PIECES			TOTAL NET WEIGHT	
5	350			13,820 LBS. 6,269 KG.	

Ladle Analysis of Heat P-Product Analysis of Parent Coil CHEMICAL ANALYSIS

ID	C	MN	P	S	SI	CR	NI	MO	N	CU
L 7561249	10	1.11	.024	.001	.49	17.48	7.11	.22	.032	.22



AK Steel Corporation
Metallurgical Test Report
Coshoccon Works
17400 State Route 16
Coshoccon, OH 43812 U.S.A.

Page 2

Load No. 9569387
Srn No. 9569387

MILL ORDER NO. 282962-0104 PROCESSOR ORDER NO. M 01004687 BUYERS ORDER NO. M 01004687

PART NO. 48443

ENGLISH UNITS - :PRODUCT- : METRIC UNITS
.0320 NOM 36.0000 X 120.0000

CUSTOMER
SHIP TO

SHIPPING DATE: 08/04/2016

REMARKS

NO INTENTIONAL ADDITIONS OF MERCURY OR MERCURY COMPOUNDS WERE MADE OR USED THROUGHOUT THE PROCESSING AND TESTING OF THIS MATERIAL.
NO WELD REPAIRS (WITH OR WITHOUT FILLER METAL) HAVE BEEN MADE.
THIS MATERIAL WAS MELTED AND MANUFACTURED IN THE U.S.A. (DFAFS 252.225.7001, 7008 & 7009 COMPLIANT).
STAINLESS STEELS SUPPLIED BY AK STEEL CORPORATION COMPLY WITH THE EUROPEAN END-OF-LIFE VEHICLE DIRECTIVE 2000/53/EC (ELVD) AND THE RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE KNOWN AS EU-DIRECTIVE 2011/65/EU, EFFECTIVE JANUARY 3, 2013 (ROHS 2).
RESIDUAL LEVELS OF Hg, Pb, Cd, & HEXAVALENT CHROMIUM ARE WITHIN ACCEPTABLE LIMITS ACCORDING TO THESE DIRECTIVES.
MATERIAL SUPPLIED IN ACCORDANCE WITH EN 10204:2004 TYPE 3.1

PRODUCT DESCRIPTION

CR SHIT TYPE 301 STAINLESS NI 7.0% MIN #2B FINISH FULL HARD SLIT EDGE * AMS 5519N * ASTM F 899-12B (UNS S30100 TYPE 301) * ASTM A 480-16A EX PARA 25.1.1.3 COIL WILL BE TAGGED ON OUTSIDE ONLY * ASTM A 666-15

PARENT LIFT	POS	DIR	COND	% ELONG	ELONG METHOD	ELONG GAUGE LENGTH	TENSILE STRENGTH (KSI)	Y.S. .2% OFFSET (KSI)	ROCKWELL HARDNESS Tail	ROCKWELL HARDNESS Front
373383-10A	T	T	A.S.T.M 13.1		MEASURED	2 1/2 inch	206	168.3	C 44	C 45
PARENT LIFT	POS	DIR	COND	BEND 180 4T						
373383-10A	T	(L, T, D)	A.S.T.M	PASS						
PARENT LIFT	POS	DIR	COND	% ELONG	ELONG METHOD	ELONG GAUGE LENGTH	TENSILE STRENGTH (KSI)	Y.S. .2% OFFSET (KSI)	ROCKWELL HARDNESS Tail	ROCKWELL HARDNESS Front
373383-10A	F	T	A.S.T.M 11.4		MEASURED	2 1/2 inch	210	167.7	C 44	C 45

*** CONTINUED ON NEXT PAGE ***



AK Steel Corporation
Metallurgical Test Report
Coshoccon Works
17400 State Route 16
Coshoccon, OH 43812 U.S.A.

Page 3

Load No. 9569387
Srn No. 9569387

MILL ORDER NO. 282962-0104 PROCESSOR ORDER NO. M 01004687 BUYERS ORDER NO. M 01004687

PART NO. 48443

ENGLISH UNITS - :PRODUCT:- METRIC UNITS
.0320 NOM 36.0000 X 120.0000

CUSTOMER SHIP TO

PARENT LIFT ID	POS	DIR (L, T, D)	COND	BEND 180 4T															
373383-10A	F		A.S.T.M	PASS															

THE CHEMICAL ANALYSIS AND PHYSICAL OR MECHANICAL TESTS REPORTED ABOVE ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.
ALL TESTING IS DONE IN ACCORDANCE WITH A.S.T.M. STANDARDS UNLESS OTHERWISE NOTED

THIS CERTIFIED TEST REPORT HAS BEEN DELIVERED TO A CONSIGNEE OF MATERIAL PURCHASED FROM AK Steel Corporation. TO AVOID THE POSSIBILITY OF ITS MISUSE ON DELIVERY OF THE REPORT TO A THIRD PARTY IT MUST BE RE-CERTIFIED BY AND UNDER THE NAME OF SUCH CONSIGNEE

AK Steel Corporation 513-425-5000

MMQC004 REV.4, 1/14
Program Version LM4388 1.11

SIGNED

Christopher J. Nork
CHRISTOPHER J. NORK

QUALITY MANAGER

DATE 08/04/2016 TIME 01:21 PM

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: mt-Bronze-C63000.R2.250 PO / BATCH NO.: 039709/5066782
 DATE: APR 30 2018

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 6"
 QUANTITY INSPECTED: 6"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 2.250
 THICKNESS RECEIVED: 2.250
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL PER M-DRAWING	(Y) N	<u>N/A ID</u>
CORRECT THICKNESS	(Y) N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	(Y) N	<u>Heat # PO # 039709 lot # 8932K54</u>
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS 11</u> <u>APR 30 2018</u> <u>/PR 12-0430</u> DATE: <u>9-89</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

REV.	DESCRIPTION	ECON #	DATE	BY	APPROVED
A	NEW ISSUE	17-787	17.12.12	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: BRONZE C63000
 SPECIFICATION: AMS 4640 OR ASME SB150 OR ASTM B150 OR SAE J461 OR SAE J463
 PART NUMBER: MT-BRONZE-C63000-R-[D.DDD]
 WHERE D.DDD IS DIAMETER IN INCHES
 EXAMPLE: 1/4" ROUND BRONZE C63000 = MT-BRONZE-C63000-R-0.250

 DART AEROSPACE	
TITLE BRONZE C63000 ROUND BAR	
PART NO. MT-BRONZE-C63000-R	
TOOL NO. A	REV A
DESIGNED BY: VM 17/12/12 CHECKED BY: VM 17/12/2017 DRAWN BY: VM 17/12/2017 MFG REVIEW BY: DP 12/12/2017 APPROVED BY: ML 12/12/2017	
INITIALS AND DATE SCALE: 1:1 SHEET 1 OF 1	
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Bronze

For information about bronze alloys, see page 3571.

High-Strength Formable 544 Bearing Bronze



- Yield Strength: 50,000 psi
- Hardness: Not Rated
- Temper: H04 (Full Hard)
- Heat Treatable: No
- Specifications Met: ASTM B139

Known for its ability to resist stress cracking and fatigue, 544 bronze also offers good formability and excellent machinability. It's commonly called phosphor bronze. In addition to bearings, it is often used for shafts, gears, and valve parts.

Dia.	Dia. Tolerance Range		1/2 ft. Lg.	1 ft. Lg.	2 ft. Lg.	3 ft. Lg.	6 ft. Lg.
3/16"	-0.002" to 0.002"	8971K21	\$2.69	\$4.76	\$8.48	\$11.79	\$20.68
1/4"	-0.002" to 0.002"	8971K31	3.39	5.99	10.68	14.84	26.04
5/16"	-0.002" to 0.002"	8971K33	5.47	9.69	17.27	24.00	42.11
3/8"	-0.002" to 0.002"	8971K35	7.78	13.76	24.53	34.11	59.84
7/16"	-0.002" to 0.002"	8971K22	10.27	18.17	32.38	45.02	78.98
1/2"	-0.002" to 0.002"	8971K71	11.19	19.81	35.31	49.08	86.11
9/16"	-0.004" to 0.004"	8971K119	13.42	23.74	42.32	58.83	103.21
5/8"	-0.004" to 0.004"	8971K23	14.84	26.25	46.79	65.05	114.13
11/16"	-0.004" to 0.004"	8971K24	16.94	29.98	53.44	74.29	130.34
3/4"	-0.004" to 0.004"	8971K73	18.72	33.12	59.05	82.09	144.02
7/8"	-0.004" to 0.004"	8971K25	24.22	42.84	76.37	106.18	186.28
1"	-0.004" to 0.004"	8971K75	32.61	57.69	102.84	142.98	250.84
1 1/8"	-0.004" to 0.004"	8971K26	36.87	65.23	116.28	161.65	283.60
1 1/4"	-0.004" to 0.004"	8971K77	42.00	74.31	132.46	184.15	323.07
1 3/8"	-0.004" to 0.004"	8971K27	49.56	87.68	156.30	217.29	381.21
1 1/2"	-0.004" to 0.004"	8971K79	58.96	104.32	185.96	258.53	453.57
1 5/8"	-0.004" to 0.004"	8971K28	65.50	115.88	206.57	287.18	503.83
1 3/4"	-0.004" to 0.004"	8971K29	75.33	133.28	237.59	330.31	579.49
2"	-0.005" to 0.005"	8971K41	94.73	167.59	298.75	415.34	728.67
2 1/4"	-0.006" to 0.006"	8971K126	114.28	200.00	371.42	523.80	952.37
2 1/2"	-0.006" to 0.006"	8971K133	137.25	240.18	446.05	629.04	1,143.71

Oil-Filled 840 and 841 Bearing Bronze Sheets



- Yield Strength:
840 Bearing Bronze: 7,000 psi
841 Bearing Bronze: 11,000 psi
- Hardness: Not Rated
- Temper: Not Rated
- Heat Treatable: No
- Specifications Met: ASTM B438

Powdered bronze is pressed and then impregnated with SAE 30 oil to make this material self-lubricating. Use it to make bearings and parts for hard-to-reach areas that would be difficult to access for lubrication, such as well pumps and turbine blades.

5" x 6"			6" x 12"		
Thick.	Thick. Tolerance Range	Material	Each	Material	Each
1/16"	-0.01" to 0.01"	841 Bearing Bronze 8933K11	\$68.27	841 Bearing Bronze 8933K24	\$138.12
3/16"	-0.01" to 0.01"	841 Bearing Bronze 8933K12	76.22	840 Bearing Bronze 8933K25	153.36
1/4"	-0.01" to 0.01"	841 Bearing Bronze 8933K13	75.20	840 Bearing Bronze 8933K19	164.05
3/8"	-0.01" to 0.01"	841 Bearing Bronze 8933K14	91.10	840 Bearing Bronze 8933K21	205.72
1/2"	-0.01" to 0.01"	841 Bearing Bronze 8933K15	102.88	840 Bearing Bronze 8933K22	248.75
5/8"	-0.01" to 0.01"	841 Bearing Bronze 8933K16	119.12	840 Bearing Bronze 8933K26	252.48
3/4"	-0.01" to 0.01"	841 Bearing Bronze 8933K17	138.83	840 Bearing Bronze 8933K27	330.62
1"	-0.01" to 0.01"	841 Bearing Bronze 8933K18	157.34	840 Bearing Bronze 8933K23	402.60

Oil-Filled 841 Bearing Bronze Tubes



- Yield Strength: 11,000 psi
- Hardness: Not Rated
- Temper: Not Rated
- Heat Treatable: No

- Specifications Met: ASTM B438

Powdered bronze is pressed and then impregnated with SAE 30 oil to make this material self-lubricating. Use it to make bearings and parts for hard-to-reach areas that would be difficult to access for well pumps and turbine blades.

OD	Tolerance Rating	ID	3" Lg.	6 1/2" Lg.
3/16" Wall Thick.				
1"	Oversized	5/8"	\$931K111	\$17.27 \$26.57
1/4" Wall Thick.				
1"	Oversized	1/2"	\$931K121	18.27 28.11
1 1/8"	Oversized	5/8"	\$931K131	22.57 34.73
1 1/4"	Oversized	3/4"	\$931K141	24.27 37.34
1 3/8"	Oversized	7/8"	\$931K151	28.14 43.29
1 1/2"	Oversized	1"	\$931K161	30.66 47.17
1 3/4"	Oversized	1 1/4"	\$931K171	31.26 48.09
2"	Oversized	1 1/2"	\$931K181	36.08 55.51
2 1/4"	Oversized	1 3/4"	\$931K191	41.83 64.35
5/16" Wall Thick.				
1 1/8"	Oversized	1/2"	\$931K201	24.02 36.96
1 1/4"	Oversized	5/8"	\$931K211	25.08 38.58
1 1/2"	Oversized	7/8"	\$931K221	32.23 49.59
1 5/8"	Oversized	1"	\$931K231	34.11 52.47
3/8" Wall Thick.				
1 1/4"	Oversized	1/2"	\$931K241	25.81 39.70
1 3/8"	Oversized	5/8"	\$931K251	33.56 51.63
1 1/2"	Oversized	3/4"	\$931K261	32.28 49.66
1 3/4"	Oversized	1"	\$931K271	38.42 59.11
2"	Oversized	1 1/4"	\$931K281	42.00 64.62
2 1/4"	Oversized	1 1/2"	\$931K291	50.56 77.78
2 1/2"	Oversized	1 3/4"	\$931K301	53.57 82.42
2 3/4"	Oversized	2"	\$931K311	58.79 90.44
3"	Oversized	2 1/4"	\$931K321	68.12 104.80
3 1/4"	Oversized	3"	\$931K331	82.73 127.27

OD	Tolerance Rating	ID	3" Lg.	6 1/2" Lg.
7/16" Wall Thick.				
1 1/2"	Oversized	5/8"	\$931K341	\$34.35 \$52.84
1/2" Wall Thick.				
1 1/2"	Oversized	1/2"	\$931K351	37.06 57.02
1 3/4"	Oversized	3/4"	\$931K361	43.90 67.54
2"	Oversized	1"	\$931K371	48.93 75.28
2 1/4"	Oversized	1 1/4"	\$931K381	58.86 90.55
2 1/2"	Oversized	1 1/2"	\$931K391	61.91 95.25
2 3/4"	Oversized	1 3/4"	\$931K401	68.61 105.55
3"	Oversized	2"	\$931K411	78.49 120.76
3 1/4"	Oversized	2 1/4"	\$931K421	87.10 134.00
3 1/2"	Oversized	2 1/2"	\$931K431	92.86 142.86
4"	Oversized	3"	\$931K441	102.80 158.15
5/8" Wall Thick.				
2"	Oversized	3/4"	\$931K451	53.95 83.00
2 1/2"	Oversized	1 1/4"	\$931K461	69.39 106.75
3"	Oversized	1 3/4"	\$931K471	84.51 130.02
3 3/4"	Oversized	2 1/2"	\$931K481	116.76 179.63
11/16" Wall Thick.				
2"	Oversized	5/8"	\$931K491	56.20 86.46

OD	Tolerance Rating	ID	3" Lg.	6 1/2" Lg.
3/4" Wall Thick.				
2"	Oversized	1/2"	\$931K501	\$60.68 \$93.36
2 1/2"	Oversized	1"	\$931K511	80.28 123.50
3"	Oversized	1 1/2"	\$931K521	92.44 142.21
4"	Oversized	2 1/2"	\$931K531	136.51 210.02
7/8" Wall Thick.				
3"	Oversized	1 1/4"	\$931K541	97.87 150.57
3 1/2"	Oversized	1 3/4"	\$931K551	133.25 205.00
1" Wall Thick.				
3"	Oversized	1"	\$931K561	104.20 160.31
4"	Oversized	2"	\$931K571	156.57 240.87
4 1/2"	Oversized	2 1/2"	\$931K581	190.41 292.94
5"	Oversized	3"	\$931K591	207.77 319.64
6"	Oversized	4"	\$931K601	256.87 395.18
7"	Oversized	5"	\$931K611	306.15 471.00
1 1/2" Wall Thick.				
6"	Oversized	3"	\$931K621	327.13 503.27

Oil-Filled 841 Bearing Bronze Rods



- Yield Strength: 11,000 psi
- Hardness: Not Rated
- Temper: Not Rated
- Heat Treatable: No
- Specifications Met: ASTM B438

Powdered bronze is pressed and then impregnated with SAE 30 oil to make this material self-lubricating. Use it to make bearings and parts for hard-to-reach areas that would be difficult to access for lubrication, such as well pumps and turbine blades.

Dia	Tolerance Rating		2"	3"	6 1/2"
			Lg	Lg	Lg
1/4"	Oversized	8932K31	\$2.69		
3/8"	Oversized	8932K32		\$6.00	
1/2"	Oversized	8932K41		9.17	\$12.74
5/8"	Oversized	8932K42		12.76	17.72
3/4"	Oversized	8932K43		15.49	21.51
7/8"	Oversized	8932K44		17.05	26.23
1"	Oversized	8932K45		21.12	32.50
1 1/8"	Oversized	8932K46		22.63	34.81
1 1/4"	Oversized	8932K47		27.20	41.84
1 3/8"	Oversized	8932K48		31.85	49.00
1 1/2"	Oversized	8932K49		35.00	53.85
1 5/8"	Oversized	8932K51		41.39	63.67
1 3/4"	Oversized	8932K52		44.88	69.04
2"	Oversized	8932K53		54.93	84.51
2 1/4"	Oversized	8932K54		68.55	105.46
2 1/2"	Oversized	8932K55		81.49	125.37
3"	Oversized	8932K56		115.30	177.38
4"	Oversized	8932K57		199.97	307.64
5"	Oversized	8932K58		304.24	468.06
6"	Oversized	8932K59		427.15	657.15

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Oil-Filled 841 Bearing Bronze Tubes

